

REMARKS

Reconsideration of the application, as amended, is respectfully requested.

I. STATUS OF CLAIMS

Claims 1-5, 7-13, 22 and 23 are pending in this application. Claims 1, 22 and 23 have been amended herewith to more particularly point out and distinctly claim that which applicants regard as their invention. Moreover, claim 3 has been cancelled without prejudice. New claims 26-29 have been added.

It is respectfully submitted that no new matter has been added by virtue of this amendment.

II. 35 U.S.C. 103(a) REJECTIONS

(i) Claims 1, 2, 4, 5, 7, 11, 12, 13, 22 and 23 have been rejected under 35 U.S.C. 103(a) as being unpatentable over by U.S. Patent No. 6,927,410 to Chen ("the Chen patent") in view of U.S. Patent No. 6,943,365 to Lowrey et al ("the Lowrey patent").

(ii) Claims 3, 9, and 10 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Chen and Lowrey as discussed above, in view of U.S. Patent No. 5,536,947 to Klersy et al. ("the Klersy patent").

(iii) Claim 8 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Chen and Lowrey as discussed above, in view of U.S. Patent Application Publication No. 2004/0178401 to Ovshinsky et al. ("the Ovshinsky publication").

In response, it is submitted that the combination of Chen, Lowrey, Klersy and Ovshinsky fails to teach or suggest all of the features recited in amended claims 1 and 22.

In particular, the cited references of Chen, Lowrey, Klersy and Ovshinsky each at the very least fail to teach or suggest a multi-bit phase change memory cell (claim 1) or a multi-bit

phase change memory (claim 22), wherein each of the plurality of phase change material layers have the same resistivity, as essentially recited in claims 1 and 22.

As conceded in the instant Office Action, the primary reference, Chen fails to teach or suggest a plurality of phase change material layers having the same resistivity. (See **page 6 of the instant Office Action**). Moreover, combining Chen with Klersy as proposed in the instant Office Action would fail to cure the above-mentioned deficiency of the Chen reference because Klersy also at the very least fails to teach or suggest a multi-bit phase change memory cell (claim 1) or a multi-bit phase change memory (claim 22), wherein each of the plurality of phase change material layers have the same resistivity, as essentially recited in claims 1 and 22.

Although Klersy discusses that multiple layers of the same alloy may be present in a volume of memory material, this description in Klersy is still insufficient for teaching that each of these layers has the same resistivity for at least the following reasons set forth below. (See **Col. 14 of Klersy**). For one, Klersy is completely silent about whether any of these multiple layers can or should have the same resistivities as each other. Moreover, Klersy also fails to discuss any of the following: the surface area, electrical resistance and height for each of the multiple layers of the volume of memory material. It is well known in the art that surface area, electric resistance and layer height are all factors which affect the resistivities of a phase change material layer. Thus, even if the multiple layers of the volume of memory material in Klersy are indeed formed of the same alloy, this fact alone may not be dispositive of whether these layers will have the same resistivity. For example, if any of the surface areas, heights and/or resistances of these multiple layers differ from one another, the resistivities of each of these layers of memory material may not be the same as one another.

Accordingly, as Klersy fails to describe any of the above-mentioned resistivity factors in relation to its multiple phase change memory material, Klersy thus fails to provide one skilled in the art with sufficient guidance for arriving at a multi-bit phase change memory cell (claim 1) or a multi-bit phase change memory (claim 22), wherein each of the plurality of phase change material layers have the same resistivity, as essentially recited in claims 1 and 22. Consequently, even if Klersy and Chen were combined as proposed in the instant Office Action, this combination would still not teach or suggest all of the features of the multi-bit phase change memory cell (claim 1) or multi-bit phase change memory (claim 22) recited in claims 1 and 22 for at least the reasons set forth above.

Moreover, as with Chen and Klersy, Ovshinsky and Lowrey also at the very least fail to teach or suggest a multi-bit phase change memory cell (claim 1) or a multi-bit phase change memory (claim 22), wherein each of the plurality of phase change material layers have the same resistivity, as essentially recited in claims 1 and 22. Therefore, for at least the reasons set forth above, removal of the rejections to claims 1 and 22 is respectfully requested. As claims 2, 4, 5 and 7-13 depend from claim 1 and claim 23 depends from claim 22, withdrawal of the rejection to these dependent claims is likewise requested. New claim 29, as it depends from claim 22 is also patentable over all of the above cited references for at least the reasons set forth above with regard to claim 22.

Besides the reasons set forth above, claim 7 is even further distinguishable over the cited references of Chen, Lowrey, Klersy and Ovshinsky because each of these references at the very least fails to teach or suggest a multi-bit phase change memory cell, wherein the plurality of

conductive layers includes a plurality of intermediate conductive layers disposed between the first and second outer conductive layers, and each of the intermediate conductive layers has the same dimensions as an adjacent phase change material layer, as essentially recited in claim 7.

The Examiner in the instant Office Action takes the position that Chen teaches that layers 24 which correspond to the intermediate conductive layers recited in claim 7 have the same dimensions as the adjacent phase change material layers 22 which correspond to the phase change material layers of claim 7. (See page 5 of the instant Office Action). Applicants respectfully disagree with the Examiners position. Rather, contrary to the Examiner's position, the intermediate layers 24 in Chen clearly do not have the same dimensions as the adjacent phase change material layers 22. At best, in Chen, layers 24 may have the same dimensions as each other, but as can be clearly seen from the figures in Chen, at the very least, each of the layers 24 has a greater height and greater thickness than the height and thicknesses of each of the phase change material layers 22. (See Fig. 3 of Chen). Thus, Chen fails to teach or suggest providing intermediate conductive layers having the same dimensions as an adjacent phase change material layer. Moreover, combining Chen with Lowrey, Klersy and/or Ovshinsky would fail to cure the deficiencies of the Chen reference because Lowrey, Klersy and Ovshinsky likewise fail to teach or suggest a multi-bit phase change memory cell, wherein each of the intermediate conductive layers has the same dimensions as an adjacent phase change material layer, as essentially recited in claim 7.

Lastly, new claims 26-28 are likewise patentable over Chen, Lowrey, Klersy and Ovshinsky for at least the same reasons as set forth above with regard to claim 7.

III. CONCLUSION:

In summary, applicants respectfully submit that the instant application is in condition for allowance. Early notice to that end is earnestly solicited.

If a telephone conference would be of assistance in furthering prosecution of the subject application, applicant requests that the undersigned be contacted at the number below.

Respectfully submitted,

Dated:

2/2/07

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